Mergers and Acquisitions in Shipping

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ABSTRACT

In this comprehensive study of all shipping mergers and acquisitions since 1984 we document that the shareholders of both acquirers and targets realise average abnormal gains of 1.2% and 3.3% respectively and both parties gain more from diversifying than focus-increasing deals. Acquirers gain more when paying with stock, in cross-border deals and from taking over public targets, while larger acquirers destroy wealth. Targets gain more from cross-border and focus-increasing deals. Regulatory interventions, like the EU repeal of exemption from competition and the US Ocean Shipping Reform Act, affect the marginal merger propensity and this propensity differs significantly across regions.

Key words: Takeovers; Mergers; Shipping; Abnormal returns; Wealth effects.

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1. Introduction.

The world's largest shipping company, AP Moller-Maersk, operates in more than 135 countries around the world, employs 117,000 employees and controls over 16% of the global market with more than 500 container vessels and 2.6 million TEU[1] generating nearly US$ 60 billion in revenues. The group has established its dominance with fast growth fuelled by a series of mergers and acquisitions. In 2005, AP Moller-Maersk acquired Royal P&O Nedlloyd N.V. in a deal that added 156 container vessels and 13,000 employees to the group. In a long line of mergers, some of the largest deals are: TORM Lines in 2002, the containers division of Sea-Land Services Inc. in 1999 and the purchase of Safmarine Containers Lines (SCL) from Safmarine. The P&O Nedlloyd container line was itself previously another shipping giant that was created in 1997 by the merger of the container-shipping liner divisions of Royal Nedlloyd (Dutch) and P&O Containers (British). This level of rapid growth of the shipping companies through mergers and acquisitions is beyond the reach of organic expansion pathways and has shaped the maritime industry over the last thirty years.

The shipping industry has experienced significant consolidation which has led to a notable increase in the level of concentration through mergers and acquisitions and an equally important process of integration is occurring among upstream and downstream transportation firms (Van de Voorde and Vaneslander, 2009). Mergers and Acquisitions (M&As) are an important mechanism of fast growth used by shipping firms, which have lead to increased levels of consolidation and integration in the maritime sector (Cariou, 2008; Frémont, 2009). Little is known, however, about the shareholder wealth implications of these important decisions by shipping firms and their economic value effects.[2] These corporate events are expected to produce price effects as investors respond to M&A announcements.[3]

M&A deals are prominent in the maritime sector with over US $200 billion spent over the last thirty years on more than 4,100 deals and the opportunity to achieve large economies of scale among deep sea liners have forced periodic rationalisations (Heaver et al. 2000). A distinctive feature of the shipping sector is that both regulation and technology have major impacts on the operations of the constituent firms. While technological innovation and evolution allowed the construction of ever larger ships with higher economies of scale (note the new Maersk vessels at over 15,000 TEU), regulation has also progressed apace. In Europe, regulation initially exempted shipping from competition considerations though this is no longer the case (Cariou, 2008) and similar deregulatory considerations apply in the US following the introduction of the Ocean Shipping Reform Act (OSRA, 1998) and its implementation by the Federal Maritime Commission. The processes of consolidation within the maritime sector and integration along

[1] TEU: Twenty foot Equivalent Unit is a typical unit of shipping trade volume and 1 TEU denotes approximately one container.

[2] This is not surprising since the maritime sector has traditionally not been associated with extensive use of the financial markets for the raising of finance. The primary reasons are claimed to be mutual lack of knowledge and firms' reluctance to operate with less than full personal control and the markets' presumption of industrial instability in shipping (Stokes, 1996).

[3] Unlike the situation noted much earlier by Stokes (1996), Grammenos and Papapostolou (2012) report that in recent years, shipping firms are increasingly raising capital via IPOs and claim that shipping firms are now better known among institutional investors with increased analyst coverage.

globally networked supply chains noted above are, therefore, expected to continue and M&As are strategic means deployed in these processes (Van de Voorde and Vaneslander, 2009). The literature has, however, failed to supply global and comprehensive evidence of stock markets' responses to maritime M&As.

There are several reasons for studying M&As in the shipping industry. Firstly, most large shipping firms have recently embarked on M&As because the alternative option of growing organically is relatively slow given the need for global scope in shipping operations (Das 2011). Secondly, a closer examination of the maritime M&As is warranted due to their implications for the structure of companies, the level of competition in the maritime sector and the costs of transportation services on international trade. Thirdly, shipping firms are seeking, through M&As, increasing economies of scale both in larger ships and bigger fleets, as well as economies of scope in fleet composition, extended trade routes and market coverage. Fourthly, a new generation of ship owners who better understand the capital markets, are prospecting for growth opportunities through the raising of financing via equity markets and the pursuit of fast expansion via M&As (Merikas et al. 2009; Grammenos and Papapostolou, 2012). Furthermore, as Andreou et al. (2012) argue that one benefit of studying M&As by focussing on a single industry, such as shipping, is the mitigation of possible inter-industry variations. They note that studies that span several industries will report aggregate effects that potentially mask the performance variation across industries.

Although there have been prior M&A studies in transportation, these have mostly been in the airline industry and they demonstrated that M&As can be strategic game changers.[4] The maritime sector has generated only a limited literature on M&As from an equity market perspective. Previous studies in shipping do not provide comprehensive evidence and either employ unsatisfactorily small samples, are constrained by short sample periods, span few maritime sectors or restrict their investigations to specific countries and regions.[5] Panayides and Gong (2002) study two mergers in the 'liners' shipping sector whereas Samitas and Kenourgios (2007) explore fifteen mergers in the 'trampers' shipping sector. Andreou et al. (2012), investigated intermodal freight transportation but do not focus on shipping - only 30 to 48 firms in their sample related to shipping - and report results that are specific to the US. Furthermore, other earlier studies have been mostly descriptive in nature and provide little market-based evidence that documents the equity markets' evaluation of shipping M&As (see Brooks and Ritchie 2006).

In this light, several interesting questions remain unanswered and require investigation. Do the shareholders of acquirers and targets in maritime M&As experience positive wealth effects and do these effects vary by region and sector? What factors determine such wealth effects? Do these factors vary across Asian, European and North American firms and do they display sector-wise variations?[6] For instance,

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4 See Zhang and Aldridge (1997), on mergers; Gong, Firth and Cullinane (2008), for industry dynamics and stock market reactions; Merkert and Morrell (2012) examine optimal airline size and economies of scale.

5 See for example, Midoro and Pitto (2000); Panayides and Gong (2002); Samitas and Kenourgios (2007).

6 Simulation evidence of multi-port vs. hub and spoke port calls by container ships shows marked variation between N. America, Asia and Europe where multi-port calls with smaller ships lead to lower cost in most countries while hub and spoke port calls using mega-ships lead to lower cost in European container shipping (See, Imai et al., 2009). While we do not directly test for

does integration between two port operations firms affect market valuations similarly to integration between a port operator and a deep sea liner firm? In this context, this study has four objectives: firstly, to establish the wealth effects on shareholders of acquirer and target firms in shipping M&As; secondly, to investigate whether there are variations in the wealth effects across regions or sectors; thirdly, to determine which firm and deal characteristics can explain the announcement period wealth effects and finally to estimate the marginal effects of the factors driving the likelihood of shipping firms engaging in an M&A and whether these marginal effects vary across different regulatory regimes and regions.[7]

Our study makes several contributions to the shipping transportation literature. Initially, the study includes all M&A announcements involving shipping firms, in contrast to the prior fragmented evidence, and examines all shipping sub-sectors, which provides generalizable findings. Country-specific studies suffer from potential biases arising from the effects of regulatory and legal constraints which restrict the scope of their conclusions. We avoid such bias by including M&As from all countries. Finally, evidence from studies covering a narrow span of years can be influenced by the transitory economic conditions of a particular period. Our study covers more than a quarter century of shipping M&As and we, therefore, document findings that are robust to variations prevalent in the economic environment.

Secondly, the study explores the effects of M&As on both targets and acquirers in contrast to prior work which has largely focussed on acquirer firms. The contribution extends beyond measuring the wealth effects associated with M&As to investigating the economic dollar value effects on the shareholders of acquirers and targets and the net economic impact.[8] We investigate these wealth effects for various strategies that have been employed by the managers of shipping firms. We examine differences in the gains from: cross-border versus domestic integration, focussing as opposed to diversifying integration, cash-financed compared to stock financed integration, private targets as compared to public, friendly mergers as opposed to mergers that are not, and finally we investigate the bargaining power of the parties involved.

Thirdly, by including all shipping M&As we make our findings representative and generalizable and avoid the sample selection bias noted by Netter et al. (2010). They argue that previous large-sample studies of M&As, which selected samples through minimum deal-value thresholds, have inadvertently imposed a natural sample selection bias. Furthermore, studies often also exclude M&As that do not report deal values. The results of such studies are not representative of M&A activity and as Netter et al. (2010) conclude, these selection criteria have noticeably biased the results reported in prior studies.

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network architectures we argue that M&As that seek out such cost reductions are occurring across regions and they seek economies of scale and of scope and hence test for differences due to focus and diversification.

7 Wealth effects are typically measured using Cumulative Abnormal Returns (CARs) and the computation of CARs is described in detail in the methodology section.

8 Economic dollar value effects are defined as the product of the cumulative abnormal return and the market value of the firm. We use the terms economic value and dollar value synonymously to distinguish announcement effects measured in dollar terms from return measures such as abnormal returns and cumulative abnormal returns.

Fourthly, the study examines the determinants of the wealth effects of M&A transactions, exploring variations in these determinants across three major maritime sectors and three major geographical regions. Among the determinants that we investigate are firm-specific characteristics, deal-specific characteristics and macroeconomic variables, such as: relative change in GDP per capita growth rates, measured at purchasing power parity; relative change in stock market performance; and, relative change in foreign currency exchange rates.

Finally, using multinomial logit models, we examine how the determinants of the merger propensities differ across three periods of regulatory change in the shipping industry. The three periods explored are: the years prior to the passage of the OSRA (1998), which is classified as the deregulated period; the years after 2000 until the European Union (EU) repeal, in 2008, of the exemption from competition granted to the shipping industry, which we call the intervening period; and, the years after 2008, which is classified as the regulated period.

Our results show that shareholders of both target and acquirer firms experience positive wealth effects, at announcement. Abnormal returns for acquirers differ across sectors but not regions, whereas for targets abnormal returns differ across regions but not sectors. Overall, shipping M&As create wealth, on average, irrespective of region and sector and while targets secure the bulk of the gains. The factors associated with wealth gains vary significantly across regions and sectors. For example, what creates wealth for port operators and cargo handlers is not what drives merger gains for deep sea liners. Integration among firms in Asia is driven by different factors as compared to integration among shipping firms in N. America or Europe.

Section two discusses the relevant prior literature and hypotheses while section three describes the sample and the methodology followed by a discussion of the results in section four and a conclusion.

2. Literature review and development of expectations.

2.1. Shipping literature on mergers.

There is evidence on alliances and conferences in liner-shipping specifically but little on M&As. Brooks and Richie (2006), focused on a description of shipping M&As, over the period 1996-2000 and reported that 40% of M&As were cross-border transactions. They also report that the shipping industry has experienced significant growth particularly through strategic and synergistic consolidation. This on-going process of consolidation, Frémont (2009) notes, shows no sign of abating and shipping firms are diversifying both away from their immediate sectors and into unrelated businesses. Brooks (2000) suggests that M&As in shipping, offer strategic advantages quite different from alliances but both create economic value. Though the shipping industry has been traditionally characterised by conferences and alliances, recent corporate responses suggest the tide is changing and M&A are becoming the favoured route to rapid growth (Das 2011). We argue that this new found impetus for M&As is a manifestation of synergy related

motives as noted in the general M&A literature: size-related economies of scale which yield operational efficiency in ships and fleets; and economies of scope associated with complementarities among subsidiaries in different shipping sectors (see Hirshleifer, 1993).

Shipping companies, as Heaver et al., (2000) argue, are seeking to provide door-to-door integrated transportation services and are pursuing closer integration along the transportation chain, usually via M&As. Heaver et al. (2000) provide examples of majority and minority ownership by carrier firms in port and terminal companies, with the level of control achieved in the target being strategically important for the carriers. They conclude that bargaining power has shifted to such carrier firms and argue that the future of independent port and terminal companies is bleak. The last point implies that port and terminal companies are potential targets in future M&As and have an increased likelihood of being unable to bargain for high target valuations. Midoro and Pitto (2000) provide evidence that the liner industry has undergone consolidation and global strategic alliances have formed amongst leading carriers. They note that alliances are unworkable while M&As are the growth path preferred by shipping firms. Fusilo (2009) argues that recent regulatory reforms, such as the passage of OSRA in the US and the repeal by the EU of the exemption from competition, which have disrupted cooperative relationships among shipping firms in favour of competition, will lead to more M&As and to a further increase in market concentration. The limited extant literature helps guide us to the relevant issues in shipping and we expect the descriptive conclusions and the assessments noted in the shipping and associated transportation literature, to be corroborated with the assessments of the equity markets' responses documented in our study.

An exploration of two M&As in the 'liner' shipping sector is reported in Panayides and Gong (2002) who conclude that M&As have a significant positive impact on the stock prices of liner companies.[9] A similar exploratory study of fifteen M&As in the 'tramper' shipping sector is reported in Samitas and Kenourgios (2007), who report insignificant price impacts at announcement.[10] These two studies are both limited by small sample sizes, which diminish the validity of the inferences that can be drawn from their findings and they do not have adequate bases on which to form inferences for the whole shipping industry. The question of how firms in the liner shipping industry choose between partnerships and acquisitions was investigated by Das (2011). Using a large sample of 427 firm-events, this study quantitatively examines this issue and concludes that liner shipping firms are more likely to acquire targets from their home 'region' - that is, they prefer domestic to cross-border M&As; additionally that prior acquisition experience increases the likelihood of acquisitions being selected as the mode of alliance (while former partnership experience

[9] This is an inference that cannot reliably be made from a sample of two mergers. The very limited sample size, short time period, and the exclusive focus on two isolated mergers alone make it clearly inadvisable to generalise from it to all shipping M&As globally. They find, for example, that the event period abnormal returns are 115%.

[10] They report peculiar results of -20% for acquirers around the announcement from -2 to +2 (not typically seen in an M&A study) and bootstrapped z-statistics on the order of -0.003 for every window, which implies that results for abnormal returns of the order of -20% are insignificant. These two factors give us little confidence that they are reporting reliable results representative of the maritime sector.

of a firm decreases the chance of that firm choosing M&As); while, redundant resources increase the chances of selecting M&As as a method of expansion. Andreou et al. (2012) report results of an event study of vertical M&As by freight transporters in the US, covering road, rail and shipping firms. Though their focus is on freight transportation firms and not on shipping per se and they document positive gains for the acquirer and target firms for their aggregate sample from the freight sector, we cannot disentangle what the gains to US shipping firms might be.

Qualitative studies in shipping M&As provide useful insights into industry dynamics, the distinctive features of deals and the typical characteristics of the firms involved while the few quantitative studies offer limited evidence on the wealth implications of shipping M&As, an exception being Andreou et al. 2012. Although there is only sparse evidence on shipping M&As, there is an extensive general M&A literature which is reviewed elsewhere (see Andrade et al., 2001) with two reported stylized facts being that targets enjoy significant wealth gains whereas acquirers experience negligible effects. The majority of studies report small positive or negative and largely insignificant wealth gains for acquirers (see Bouwman et al. 2009; Mitchell and Mulherin, 1996) though a few studies report significant losses for acquirers. More specifically, Moeller et al. (2005) report that US acquirers lost $240 billion from poor acquisitions over the period 1998-2001 in contrast to gains of $24 billion, for the period 1991-1997, and $4 billion during the 1980s. Hostile takeovers generate higher target and typically higher bidder returns (Martin and McConnell, 1991; Schwert, 2000). Acquirers of private targets earn significant abnormal returns around the announcement, in contrast to the small losses or insignificant gains of acquirers of public targets.[11] The link between firm or deal characteristics and abnormal announcement returns for the acquirers has also been extensively studied. Acquirers with low managerial shareholding, large cash holdings, large capitalisation, low leverage and overconfident management as well as those pursuing hostile or conglomerate takeovers, or paying with stock, are the worst performers.[12]

2.2. Theoretical expectations.

Given the lack of a specific theoretical framework for shipping M&As, we draw upon the general M&A literature to form our expectations concerning the wealth effects to the shareholders of acquirers and targets. A number of theories have been proposed to explain the effects of M&A activity and a major concern of this literature is whether or not these events generate combined economic value. Weston et al., (2004) classify these theories as value-increasing, value neutral and value destroying. Value increasing theories predominantly argue along neoclassical lines that technology shocks and regulatory changes motivate M&As and these are seen as corporate responses in search of efficiency improvements and synergistic gains (see Jovanovic and Rousseau, 2002; Mitchell and Mulherin, 1996). Value neutrality is

[11] See Chang (1998); Faccio et al., (2006); Moeller et al., (2005).

[12] See Chang (1998); Fuller et al., (2002); Harford (1999); Moeller et al., (2005); Morck et al., (1990) and Schwert (2000).

implied by the hubris hypothesis (Roll 1986). Value decreasing theories are associated with agency problems and managerial entrenchment (see Jensen, 1986; Shleifer and Vishny, 1989). These theories posit conflicting predictions and empirical evidence has been employed to resolve them. Next, we further develop several expectations concerning M&As in shipping: Initially, we explore the operational costs and revenues in the maritime sector, as proxied by the Bunker Fuel Index and the Baltic Dry Index; subsequently we briefly describe the valuation effects associated with the announcement of M&As; furthermore, we discuss those deal characteristics that have been studied in the literature as driving the abnormal returns and finally, we describe the macroeconomic factors that influence the shareholder abnormal returns in shipping M&As.

The maritime sector:

Bunker Fuel Index: Van de Voorde and Vanelslander (2009) argue that M&As are conducted in the maritime industry primarily to achieve economies of scale and reduce operating costs. Bunkering and capital costs represent 25% to 33% of the operating costs of a ship, according to the Baltic Exchange (2013). To examine whether fuel costs impact the likelihood of M&As occurring, we proxy the cost of fuel with the Bunker Fuel Index. Increasing fuel prices reduces profit margins and forces firms to seek efficiency improvements. We, therefore, anticipate that changes in this index can proxy for the operating cost in shipping and should be positively associated with the likelihood of M&As.

Baltic Dry Index: The Baltic Dry Index is a measure of the prevailing freight rates applicable to standard routes and typical bulk cargo in the maritime sector. The Baltic Exchange notes that there is a complex array of factors that affect the cost of transporting freight by sea: fleet supply, bunker prices, weather, industrial demand and choke points for sea-going traffic.[13] These factors contribute to the risk exposure of shipping firms and M&As could be deployed to mitigate that risk. Furthermore, following the recent global economic downturn, firms in the maritime sector are expected to maximise their economies of scale by M&As (Quantrill, 2012). An increase in the Baltic Dry Index signals higher future revenues and hence profit margins, which will ease the pressure on firms to seek efficiency improvements. Consequently, we expect that changes in this index should be negatively associated with the likelihood of M&As.

Announcement effects:

Acquirer gains: The literature on shipping M&A is largely silent on the abnormal returns for acquirers although some indirect indication is reported by Andreou et al. (2012). In contrast, the M&A literature, in general, reports insignificant acquirer abnormal returns at announcement (Andrade et al. 2001). Nevertheless, Netter et al. (2010) report that the insignificant returns could be associated with the biased

[13] Shipping trade traverses narrow lanes such as the Straits of Hormuz, Malacca, the narrow canals of the Suez and Panama and the Bosporus (The Baltic Exchange, 2013).

sample selection procedures in prior studies, which have focussed on larger mergers. By studying a comprehensive worldwide sample of acquirers in the shipping industry, not restricted by any particular selection criteria except data requirements, our results should be an unbiased representation of the wealth effects attributable to acquirers in shipping M&As. Following the evidence reported in Andreou et al. (2012) we expect that shareholders of acquirer firms will realise positive announcement period abnormal returns.

Target gains: The evidence concerning wealth effects to target shareholders is undisputed in the literature, since there is consensus and empirical studies report significant and large positive abnormal returns for targets (Andrade et al. 2001; Andreou et al. 2012). Target shareholders receive substantial premiums for relinquishing control to the acquirer. On this basis, we expect that the shareholders of targets will realise positive announcement period abnormal returns.

Combined gains: Bhagat et al. (2005) provide empirical evidence confirming that combined wealth effects in M&As are positive and significantly larger than those implied by prior studies. Furthermore, Andreou et al. (2012) report combined wealth effects, measured by market value-weighted Cumulative Abnormal Returns (CARs), which are positive for freight transportation firms in the USA, where shipping is a sub sample. On this basis our expectation is that M&A announcements in shipping will result in wealth gains for acquirers and targets.

Deal characteristics:

Cross border vs. domestic: Cross-border mergers have been growing rapidly in volume but to date have not been investigated as extensively as domestic mergers.[14] Shipping firms may expand abroad to protect their relationship with globalising customers (Martin et al. 1998). Asymmetric information is less likely to be a problem in domestic compared with cross-border mergers because managers of acquiring firms have better quality information on domestic as compared to foreign targets. Acquirers taking over domestic firms are, therefore, less likely to overpay than when acquiring foreign targets. International expansion and entry into overseas markets via direct investment is highly risky and the preferred mode of entry in such cases is through strategic alliances and M&As. The acquirer seeking international expansion is often prepared to pay a market entry premium to acquire a suitable foreign target. The target firm in a cross-border acquisition is, therefore, more likely to benefit from such entry premiums being extracted from the acquirer, than targets in domestic takeovers, which do not command similar premiums. As a result, it is expected that the shareholders of the acquiring firm in a cross-border acquisition will realise lower abnormal returns than an acquiring firm in a domestic acquisition.

[14] A cross-border M&A is defined as one where the acquirer and target firms are from different nations while domestic M&As are those deals where both acquirer and target are from the same nation. The nationalities of the firms are as listed in the SDC M&A database.

Focus vs. diversification: The OECD has reported that there are concerns about the increasing concentration within maritime sectors (see OECD-ITF Report by Van de Voorde and Vanelslander, 2009). Frémont (2009) reports that an on-going process of consolidation through M&As over the past 25 years has fuelled an increase in the level of concentration in the shipping industry from 40% in 1980 to over 80% in 2007. Corporate diversification is wealth destroying and leads to a valuation discount, while focus-increasing events have been argued to increase wealth (John and Ofek, 1995).[15] There is debate in the literature on the extent to which the strategies that firms adopt are contingent upon the arrival of positive or negative industry shocks (Coco and Mahrt-Smith, 2001). As competition has intensified over the last 30 years, pressures to improve operational efficiencies have driven shipping firms to engage in extensive M&A activity seeking economies of scale. Focus increasing deals, which enlarge the core operations, should allow acquirers to realize these scale economies. Shareholders of acquirer shipping firms, in acquisitions that increase focus, are expected to achieve higher abnormal returns than are shareholders in diversifying acquisitions.

Private vs. public: As the maritime sector is populated by a significant number of private operators, expansion and consolidation within this sector will entail a large proportion of private target takeovers (Rodrigue, 2010). A number of theoretical arguments have been proposed in the literature to explain the observed higher gains realized by acquirers when taking over private as compared to public targets. Fuller et al. (2002) claim that private firms are less attractive to investors than similar firms listed on a stock exchange. This creates a lower valuation for such private firms compared to similar listed firms and the proportionate valuation difference is called a liquidity discount. Acquirers are, consequently, expected to secure lower valuations for the private as opposed to public targets. Faccio et al. (2006) suggest that acquirers that pay with stock to takeover closely held private targets could see the formation of blockholders in their ownership structure. Such large blockholders formed in the acquirer following equity financed acquisitions will act as efficient monitors of the acquirer's management. The effect of the emergence of such large blockholders is a higher valuation for the acquirer firm. Shareholders of acquirers taking over private targets should, therefore, be expected to achieve higher abnormal returns than when taking over public targets.

Cash vs. stock: Acquisitions financed by cash, experience higher abnormal returns for both the acquirer's and the target's shareholders (Travlos, 1987). The rationale is that while cash is a risk-free payment, exchange of stock distributes risk between acquirers and targets and raises the possibility of a misvalued security being used as the means of payment. More importantly, from the perspective of shipping firms, the desire to maintain ownership concentration and prevailing levels of corporate control in

[15] A focus-increasing M&A is defined as one where the acquirer and target firms are from the same sector and diversifying M&As are those deals where the acquirer and target are from different sectors. We use the 4-digit SIC codes of the firms as listed in the SDC M&A database.

the acquirer can also influence the choice of financing (Faccio and Masulis, 2005). Empirical evidence of public acquirers taking over public targets demonstrates that acquirers do not gain. Fuller et al. (2002), however, report that when public acquirers takeover private targets the shareholders of the acquirer realise positive abnormal returns. Specifically, they document that when acquirers takeover private targets and pay with stock they benefit more than when paying with cash. Since our sample of shipping M&As includes both public and private targets and in the light of the above discussion, we expect that shareholders of acquirer shipping firms involved in deals where stock is the means of payment will quite likely achieve higher abnormal returns than when cash is used.

Friendly vs. non-friendly: It is well established in the literature that hostile bids are very rare (Schwert, 2000). Given the prevalence of private operators in the maritime sector we do not anticipate a large number of hostile takeovers will ever materialise. While friendly deals are the most frequently observed events, many transactions are neither explicitly hostile nor friendly and are classed as neutral deals. Lower transactions costs and the potentially more effective post-acquisition integration associated with friendly deals support the expectation that acquirer shareholders are likely to gain more in friendly rather than neutral deals. By contrast, friendly deals can be motivated by hubris, so the acquirer is likely to overpay for the target and wealth will be transferred to the target's shareholders, resulting in acquirer shareholders losses (Roll, 1986). Such losses to acquirer shareholders when the deal attitude is friendly have been reported by Rau and Vermalean (1998). Given the contrasting evidence, whether the costs of managerial hubris dominate the benefits flowing from the lower transactions costs associated with friendly deals, becomes an empirical issue.

Bargaining power: The balance of bargaining power between acquirer and target firms can determine the distribution of the potential gains from the merger. Relative size, defined as the ratio of market value of target to acquirer, proxies for the relative bargaining power of each party in an M&A (Fuller et al. 2002). Furthermore, several studies have explored the effect of the absolute size of the acquirer on shareholder wealth effects (Moeller et al. 2005). A larger acquirer will have more resources and be more experienced in negotiating the terms of a deal than targets who are typically smaller, hence bigger acquirers should command higher bargaining power. To investigate bargaining power we employ quartiles constructed both on the relative size (ratio of target market value to acquirer market value) and on the market capitalisation of the acquirer firm.

Macroeconomic factors:

The conditions of the economic environment affect the scale of international trade, much of which is carried via standard shipping channels, which have an impact on the level of activity in the shipping sector (Van de Voorde and Vaneslander, 2009). Given that shipping is a global industry and is driven by the

demands of international trade, macroeconomic factors such as, the level of economic activity, the stock market index in a country and the foreign exchange rate, can impinge on the prospects of the shipping sector. The influence of economy-wide factors on M&A activity is investigated by Erel et al. (2012) who specifically examine the valuation effects of foreign exchange rates and of stock markets.

GDP: The GDP per capita is a measure of the total domestic production of goods and services. An increase in the GDP in our globalised economy will usually be reflected in increases in imports and exports with much of this volume of imports and exports being transported via sea-borne vessels. Growth in the GDP, therefore, will be indicative of increasing demand for shipping services. Consequently, a comparison of the growth rates in the GDP per capita between two countries will reflect the relative attractiveness of their respective shipping sectors. Shipping nations that figure prominently in terms of relative growth rates will be prime candidates for shipping firms to search for takeover targets. We measure GDP at purchasing power parity and converted into US $ and then calculate a relative GDP growth rate measure, denoted by GDPr as:

$$GDPr = \frac{GDP_{Acquirer,t}}{GDP_{Acquirer,t-1}} \Big/ \frac{GDP_{Target,t}}{GDP_{Target,t-1}} \quad (1)$$

Foreign Exchange (FX): Appreciation of the acquirer nation's currency relative to that of the target's nation makes it cheaper to acquire assets in the target's nation. We, therefore, expect it is more likely that an acquirer will takeover a firm in a nation where the currency weakens relative to its home currency. The foreign exchange rate for each country is measured using its exchange rate to the US$ and we construct a relative foreign exchange rate measure, denoted by FXr as:

$$FXr = \frac{FX_{Target,t}}{FX_{Target,t-1}} \Big/ \frac{FX_{Acquirer,t}}{FX_{Acquirer,t-1}} \quad (2)$$

Market: A rise of the home stock market of a listed acquirer is expected to increase its valuation, making it more attractive to use its own higher valued stock to purchase firms in those nations where stock market indices have appreciated less. An annual market return is calculated using the stock market index of a country and a relative market growth rate measure, denoted by RMarket, is then evaluated as:

$$RMarket = \frac{Market\ Index_{Acquirer,t}}{Market\ Index_{Acquirer,t-1}} \Big/ \frac{Market\ Index_{Target,t}}{Market\ Index_{Target,t-1}} \quad (3)$$

3. Data and methodology.

3.1 Sample.

Our sample includes all the merger and acquisition deals in the shipping industry available on the Securities Data Corporation (SDC) database accessed through Thomson-Reuters. We do not impose any

restrictions other than requiring the acquirer to be a public listed company and have announcement dates for the deal, while target firms can be either public or private. These criteria result in 4,122 announced deals with a total value of over US $200 billion (see Figure 1). We collect share prices and relevant market and accounting data from Datastream International. Data unavailability reduces our initial sample to 2,036 deals.

[Please Insert Figure 1 About Here]

To be included in the final sample, firms must have data on equity returns for the estimation and the event period. Data on the returns of each firm and the equity market index for the nation associated with each acquirer and each target firm are collected from Datastream. We also collect deal-specific information from SDC. All monetary values reported for each firm, in each M&A are converted to US$ at the US$/local currency exchange rate prevailing at the time of the announcement of the M&A. These criteria leave a final sample of 1,266 deals with bidders and targets listed in 67 different stock markets. The final sample is grouped geographically into four major regions. The majority of deals involve companies from Asia (524) and Europe (550) followed by North America (106) and all remaining deals are labelled as 'others' (86). The announcement dates in SDC are not manually cross-checked with hard-copy print sources to confirm the dates on SDC. Previous studies have verified that the announcement dates reported by SDC are accurate to the day over 90% of the time and to within two days, nearly 100% of the time (Netter et al. 2010).

We form groups for broad geographic regions; major shipping sectors; cross-border or domestic aspect of deals; the focus-diversify nature of the deal; public or private status of the target; primary methods of payment; target control level achieved by acquirer; deal attitude; relative size quintiles and acquirer market value quintiles. Deal attitude is classified as friendly, neutral and as 'others', using information reported in the SDC M&A database. Unlike the evidence from general M&A studies, in our shipping sample, there are only five hostile deals that cannot be meaningfully analysed as a separate group. We, therefore, subsume these five deals into 'others'. The 'others' group also comprises deals with a 'not reported' attitude.[16] We then investigate the wealth impact of the level of control over the target secured by the acquirer, as measured by the proportion of target shares that the acquirer owns post-acquisition. For that we form three groups: the 'full-ownership' group where the acquirer owns 100% of the shares of the target; the 'control' group where the acquirer owns more than 50% of the target's shares after the transaction (but less than 100%); and the 'toe-hold' group where the acquirer has a minority stake of less than 50%, in the target after the transaction.

[16] It follows sensitivity analysis on the effect of our choice on our results which show that the addition of the hostile takeovers in the 'others' group (or their complete elimination) does not qualitatively affect the results.

3.2 Descriptive statistics.

In Table 1 we present the annual distribution of the number of deals and the mean and median of the market value of acquirers, the deal value and the relative size of acquirer and target.[17] The number of deals increases between 1984 and the late 1990s. Around the 1992 financial crisis, M&A activity in the shipping industry slowed. There was an upward trend towards the end of the 1990s, which reached a peak of 66 deals in 1997. There was a decline in 2001/2002, seemingly triggered by the economic fallout from the dot.com bubble, followed by an increasing trend until 2007, and prior to the recent crisis, when it had reached an all-time high of 92 annual deals. The annual distribution does not reveal any striking and consistent pattern except that acquirers are becoming consistently larger with average market capitalisation over US$ 1 billion since 2004.

[Please Insert Table 1 About Here]

The largest acquirers are from Asia, with an average market capitalisation of $1.8 billion, followed by European acquirers that average $1.5 billion and the North American acquirers average $0.9 billion. The largest deals however, are North American with an average deal value of $156 million, followed by European and 'Others' and the smallest deals are Asian with average deal values of $138 million, $113 million and $68 million respectively. The acquirers in our sample are classified according to their 4-digit Standard Industry Classification (SIC) code into ten industry groups: 4412-Deep sea foreign transportation of freight (791 deals); 4424-Deep sea domestic transportation of freight (31 deals); 4449-Water transportation of freight (96 deals); 4481-Deep sea transportation of passengers, excluding ferries (18 deals); 4482-Ferries (14 deals); 4489-Water transportation of passengers (12 deals); 4492-Towing and tugboat services(20 deals); 4493-Marinas (20 deals); 4499-Water transportation services (75 deals) and 4491-Marine cargo handling (189 deals).

For the purpose of meaningful and manageable presentation of findings, we classify our sample into three composite sectors[18]:

1. FRTR Group (Freight Transportation group): includes 918 deals by acquirers in the sectors 4412, 4424 and 4449.[19]
2. PFMA Group (Passengers, Ferries, Marinas and Services group): includes 159 deals by acquirers in the sectors: 4481, 4482, 4489, 4492, 4493 and 4499.[20]
3. MC Group (Marine Cargo Handling group): includes acquirers in the 4491 sector (189 deals).[21]

[17] Relative size is defined as the ratio of the market value of the target to the market value of the acquirer.

[18] The results distributed across individual sector are available on request from the authors.

[19] E.g. Deal 1: Mitra Bahtera Segarasejati (Indonesia) acquired Usama Adhi Sejahtera PT (Indonesia) or Deal 2: Nippon Yusen KK (Japan) acquired Maestra Navegacao SA (Brazil).

[20] E.g. Deal 1: Shinwa Naiko Kaiun Kasiha (Japan) acquired Muromachi Shipping Co Ltd. (Japan) or Deal 2: ANEK Lines SA (Greece) acquired Lesvos Maritime Co. (Greece).

Descriptive statistics of accounting and market variables for acquirers and targets are presented in Table 2. The market and accounting monetary values are reported in US$ billions. The data are from Datastream and data unavailability restricts the sample size per variable.

[Please Insert Table 2 About Here]

Acquirers are on average more than twice the size of the targets with average market capitalisations of $1.59 billion and $0.63 billion respectively. The average total assets of acquirers are 65% more than those of targets. The average net income of acquirers is $113 million, which is eight times the average net income of the targets ($14 million) but their sales are only 85% higher ($2.23 billion versus $1.20 billion respectively). The acquirers' operating cash and interest cover are also higher than those of the targets. Firms naturally suffer losses in certain years as reflected in negative minimum values. The average operating margins of acquirers are almost 50% higher than those of targets: acquirers are clearly more profitable. The average return on assets (ROA) of the acquirers (4.1%) is nearly four times that of the 1.1% earned by targets. Overall the accounting and market data support the view that acquirers are better performing, better capitalised and higher valued companies than targets.

3.3 Methodology and tests.

We use a standard market model approach to estimate the daily abnormal returns of the sample of firms (Brown and Warner 1985). The standard market model uses an OLS regression to estimate the parameters of the market model, which regress the estimation-period daily returns of a firm on the daily returns of a suitable market index from the same estimation period. The estimated coefficients are used to compute the expected returns in the event period. The abnormal returns are then specified as:

$$AR_{it} = R_{it} - E(R_{it}) \sim N(0, \sigma_i^2) \tag{4}$$

$$where\ E(R_{it}) = \hat{\alpha}_i\ + \hat{\beta}_i(R_{mt})$$

R_{it} is firm *i*'s daily stock return on date *t*, R_{mt} is the return on a suitable market index *m*, also on date *t*, while $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from a period prior to the event. Day zero is the deal announcement day and reference to 'days' means trading days relative to the announcement on day zero. All announcement dates on SDC are checked and where they fall on non-trading days, they have been adjusted to instead fall on the nearest following trading day. The parameters of the market model are estimated from day -240 to day -60 and the width of the event period is determined from the market response to the announcement.[22]

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[21] E.g. Deal 1: Baltic Oil Terminals PLC (U.K.) acquired Dan-Balt Tank Lager A/S (Denmark) or Deal 2: Teco Maritime ASA (Norway) acquired Marine Trans A/S (Norway).

[22] The event window includes all days around the announcement day zero that have average abnormal returns of the same sign and significance as those on day zero. If the abnormal return on day zero is not significant, the event window is (-1,+1). Day -1 is

We require a minimum of 120 observations in the estimation period. There is evidence, as noted in Brown and Warner (1985), that extracting the parameters of the market model from an estimation period is unlikely to improve the abnormal return estimates in the event period, compared to using the market-adjusted model, which is a special case of the market model, where α_i and β_i are not estimated but restricted to be zero and one respectively, for all firms. This conclusion is valid only for those samples where the individual firms are randomly selected from the population of all listed firms and hence on average the values of α_i and β_i will equal zero and one respectively. Since our sample is exclusively from the shipping industry, the value of α_i will not equal zero and β_i will not equal one but the shipping sector's beta. We are, therefore, justified in using the market model approach. Given that we have M&As from 67 countries in our sample, we use the main stock market index associated with a nation where such an index is available for the full estimation and event period. In cases where such an index is not available, we employ the World Marine Transportation Index (WMT) from Datastream.[23]

Average Abnormal Return (AR) on a daily basis in the event period is:

$$\overline{AR}_t = \frac{1}{N}\sum_{i=1}^{N} \widetilde{AR}_{it} \quad (5)$$

where *N* is the number of firms in the sample.

Average Cumulative Abnormal Return (CAR) for a given window of length *L* in the event period is:

$$\overline{CAR}^L = \frac{1}{N}\sum_{i=1}^{N} \widetilde{CAR}_i^L \quad (6)$$

$$where\ \widetilde{CAR}_i^L = \sum_{t=1}^{L} \widetilde{AR}_{it}$$

We compute test-statistics for the average daily abnormal return. The Standardised Abnormal Return (SAR) for a firm *i*, on day *t*, is:

$$SAR_{it} = \frac{AR_{it}}{\sigma_i} \sim N(0,1) \quad (7)$$

where σ_i is the standard deviation of the abnormal returns of firm *i*, estimated from day -240 to day -61.

$$\overline{SAR}_t = \frac{1}{N}\sum_{i=1}^{N} SAR_{it} \sim N\left(0, \frac{1}{N}\right) \quad (8)$$

$$t_{AR} = \sqrt{N}\left(\overline{SAR}_t\right) \sim N(0,1) \quad (9)$$

We also compute test-statistics for the average CARs. The Cumulative Standardised Abnormal Return (CSAR) for a firm *i*, for a window of length *L*, is:

$$CSAR_i^L = \sum_{t=1}^{L} SAR_i^L \sim N(0, L) \quad (10)$$

$$\overline{CSAR}^L = \frac{1}{N}\sum_{i=1}^{N} \frac{CSAR_i^L}{\sqrt{L}} \sim N\left(0, \frac{1}{N}\right) \quad (11)$$

taken to cover the possibility of leakage of information just before the announcement and Day +1 is included to cover the possibility that, when the announcement has occurred near the close of trading on day 0, the effect will be reflected on day +1.

[23] Firms are sometimes listed in stock markets located in countries other than the country of their domicile. The country of domicile may or may not have a stock exchange. The relevant market index for such firms is that of the stock exchange in which they are listed.

$$t_{CAR} = \sqrt{N}\left(\overline{CSAR}^{L}\right) \sim N(0,1) \quad (12)$$

Since there are cross-sectional differences in the level of response to an M&A announcement, this produces an increases in the variance of the abnormal returns. We then further amend the standard errors according to the adjustment suggested by Harrington and Shrider (2007).[24] We employ OLS to investigate the relationship between the abnormal returns and several firm and deal characteristics as well as macroeconomic factors as discussed earlier in the theoretical expectations section. We extend our analysis to study potential differences in this relationship across three major geographical regions and four maritime sectors.

To examine the influence of several firm and deal characteristics as well as macroeconomic factors on the likelihood of acquirers engaging in M&As in periods of changing regulatory oversight in the US and the EU, we employ a multinomial logit model as specified in Greene (2007).

The multinomial logit model is specified as:

$$\Pr\left(y_i = j \middle| \boldsymbol{\beta}_j^{'} \boldsymbol{x}_i\right) = \frac{e^{\left(\boldsymbol{\beta}_j^{'} \boldsymbol{x}_i\right)}}{1+\sum_1^J e^{\boldsymbol{\beta}_k^{'} \boldsymbol{x}_i}}; for\ j = 1,2, \ldots J. \quad (13)$$

$$\Pr\left(y_i = 0 \middle| \boldsymbol{\beta}_j^{'} \boldsymbol{x}_i\right) = \frac{1}{1+\sum_1^J e^{\boldsymbol{\beta}_k^{'} \boldsymbol{x}_i}}, where\ \boldsymbol{\beta}_{j=0}^{'} = 0 \quad (14)$$

where y_i denotes the group to which deal *i* belongs, $\boldsymbol{\beta}_j^{'}$ is a vector of parameters to be estimated for each group j and $\boldsymbol{x}_i$ denotes the vector of variables thought to explain the likelihood of belonging to different groups.

Although the typical practice in respect to logit models is to report the estimated coefficients, since the coefficients in non-linear models are difficult to interpret, we report the marginal probabilities. As Castillo-Manzano and Loez-Valpuesta (2010) note, in logit models only the sign of the coefficients is meaningful and to extract interpretable magnitudes we need to compute the marginal effects of the logit models. The marginal effects of the various factors in our model on the probabilities are computed as:

$$\frac{\partial \mathrm{P_j}}{\partial \mathbf{X_i}} = \mathrm{P_j}\left[\boldsymbol{\beta}_\mathrm{j} - \overline{\boldsymbol{\beta}}\right]. \quad (15)$$

where $\overline{\boldsymbol{\beta}} = \sum_\mathrm{k} \mathrm{P_k}\boldsymbol{\beta}_\mathrm{k}$ (i.e. the probability weighted average of the $\boldsymbol{\beta}_\mathrm{k}$).

To implement the model, we divide time into three periods: first, we classify as the deregulatory period, the years before the passage of OSRA, in 2000; second, we classify as the intervening period, the years between the passage of OSRA in 2000 and 2008, when the EU repealed the unique exemption that had been granted to shipping, and finally, we classify as the regulated period, the years after 2008 when both the OSRA restrictions apply in the US and the EU competition regulations apply in Europe. The

[24] We thank one of the anonymous referees for this suggestion. The key effect that we observe following the adjustment is a reduction in the standard errors.

regulated period, pre-OSRA is coded as the base period (coded 0), while 2000 to 2008 is the intervening period (coded 1) and the regulated period is the post-EU-repeal period after 2008 (coded 2).

4. Results.

4.1 Event period returns for acquirers and targets.

The results of the event study are reported in Table 3, which in Panel A lists daily average abnormal returns from five days prior to the announcement date of the M&A to five days after. [25] No evidence of a pre-announcement drift in the share price of either acquirer or target firms are observed, which implies the M&A announcement was a surprise to the market.[26] In Panel B, we see that acquiring firms earn positive abnormal returns of 1.2% over the event window from three days prior to the announcement to one day after. Target firms experience positive abnormal returns of 3.3% over the same event window (-3, +1). The results reported in Panel C show that, on average, target firms realized significant economic value gains of US$ 6.8 million and though the economic value gains to acquirers of US$ 7.7 million are not significant, there was significant combined wealth creation of US$ 14.5 million. Our finding that there is overall economic value creation means that on average, shipping M&As can be thought of as wealth-enhancing events. Shipping acquirers make abnormal returns in contrast to the findings reported in the general M&A literature.

[Please Insert Table 3 About Here]

4.2 Regions and sectors: Differences in cumulative abnormal returns (CARs).

The distributions of CARs for acquirers and targets across primary shipping sectors are reported in Panel A of Table 4 and across major global regions in Panel B. One important finding in Table 4 is the robustness of the finding that equity markets evaluate acquirers and targets positively in the announcement period in all regions and in all sectors, except for acquirers in the rest of the world. While our results for shipping M&As in North America correspond to the positive abnormal returns reported in Andreou et al., (2012) for freight-related M&As in the US, we draw attention to the variation in CARs across regions and across different sectors.[27] The CARs for acquirers are significantly different across sectors (F-stat 2.80) but not across regions and, in contrast, the results for targets exhibit the opposite pattern. The CARs for targets are marginally different across regions but not sectors (F-stat 1.97). Furthermore, equity markets' responses to shipping M&As differ markedly between acquirers and targets. Target shareholders' wealth gains exceed that for acquirers almost always (sometimes by more than a factor of three) in all

[25] In Panel A we report daily average abnormal returns to justify the choice of specific event windows for acquirers and targets.

[26] The event study literature typically has interpreted, abnormal returns prior to the announcement of an event, as evidence of information leakage in the pre-announcement period.

[27] The results in Andreou et al. (2012) are strictly not comparable to our shipping-specific study since they investigate vertical integration in the transport industry in the USA and use M&As to study freight transportation firms. Shipping firms are only a part of their study, which includes rail road firms, road haulage firms, shipping firms, and others.

shipping regions and in all shipping sectors.[28] We conclude from Table 4, that the overall profile (in Table 3) of positive CARs is largely robust across regions and sectors and cannot be attributed to either regional variations in the shipping industry (e.g. Europe vs. Asia) or to specific shipping sectors (e.g. ports vs. liners). Nevertheless, we confirm that the magnitude of the positive abnormal returns is indeed different across regions for targets and across sectors for acquirers.

[Please Insert Table 4 About Here]

4.3 Cross-border vs. domestic.

Following Brooks and Ritchie (2006), who find that nearly 40% of all global shipping M&As are cross-border deals, we expect a prolonged period of global consolidation in the shipping industry. Since a study restricted to domestic M&As would exclude a large proportion of the global M&As, we study cross-border and domestic deals and their differences, the results for which are reported in Table 5. Differences in CARs are reported in Panel A and economic value in dollar terms in Panel B. The market responds positively when there is an announcement that a firm is involved in a deal, whether as an acquirer or target either in cross-border or domestic M&As (Panel A). The size of the positive target reaction is markedly higher in cross-border deals than domestic deals. Although CARs of acquirers in domestic deals are statistically significant higher than for cross-border deals, this difference is small (0.2%). This finding provides weak support for our expectation regarding acquirer and target firms in cross-border deals. We also measure and test for economic value effects. The important result is that when a firm is a target in a cross border M&A, on average, it makes US$ 16.0 million, which is significantly higher than the average US$ 3.2 million made by targets in domestic deals. For acquirers, however, there are no significant differences in dollar effects. Our results are consistent with the findings in Erel et al. (2012) who focus only on cross-border M&As but cover all deals globally. We conclude that cross-border deals are strategic decisions that create economic value. The acquirers do not gain but the targets achieve significant gains, which are attributable to entry premiums paid by the foreign acquirer. The combined effect is that cross-border deals create significantly higher economic value than domestic deals.

[Please Insert Table 5 About Here]

4.4 Focus vs. diversification.

CARs for focus-increasing and diversifying M&As are shown in Panel A of Table 6 and dollar value are reported in Panel B. Focus is value enhancing for the target firms while diversification is marginally better for acquirers. For targets, we observe positive market responses to the announcement of both focus-

[28] The t-test of difference-in-means between acquirers and targets always strongly rejects the null of equality-in-means. The test of difference in CARs between acquirers and targets is significant in every region and every sector. The exception is that acquirers in the Passenger, Ferries and Marinas sector experience higher CARs than targets.

increasing and diversifying takeovers, of 3.4% and 3.1% respectively. In contrast the shareholders of acquirers realise higher wealth gains of 1.24% in diversifying compared to 1.21% in focus-increasing deals. Furthermore, total economic value creation is significant and positive in both focus-increasing and diversifying deals and significantly higher for focus increasing deals. These results for total economic value changes are consistent with the evidence reported in the general M&A literature (John and Ofek, 1995). We conclude that in shipping M&As, focus-increasing deals create more economic value than diversifying deals though the major portion of the wealth created is captured by the target and not the acquirer.

[Please Insert Table 6 About Here]

4.5 Private vs. public targets.

We examine the differences in the CARs between acquirers that had taken over public targets as compared to private targets. The results reported in Table 7 shows that the abnormal returns of acquirers are positive whether they takeover a public or a private target. However, the positive and statistically significant CARs of 2.1% for the shareholders of acquirers of public targets are significantly higher than the 0.9% positive and statistically significant CARs realised by the shareholders of acquirers of private targets. This result is contrary to the prior evidence reported in Fuller et al. (2002) and later in Faccio and Masulis (2005). We find that acquirers create economic value, when taking over public firms or private firms and, on average, the value created is US$ 3.9 million compared to the US$ 3.1 million when taking over private firms.[29] One possible explanation for this finding is that in the shipping sector, private targets could have significant bargaining power relative to acquirers. This power would enable targets to appropriate relatively larger proportions of any economic value creation anticipated for the acquisition leaving less for the acquirer. An alternative explanation could be that acquirers are willing to pay more to private targets for strategic reasons, such as market share and growth and to deny rivals access to specific routes or ports or hinterland chains.

[Please Insert Table 7 About Here]

4.6 Effect of method of payment.

Shareholders of acquirer firms where stock is the means of payment realise higher abnormal returns than when cash is used, in line with our expectation as discussed in section 2.2. Our findings, presented in Table 8, Panel A, show that in cash acquisitions, acquirer shareholders realise statistically significant 3.8%

[29] The results reported suffer a potential upward bias in that acquirers might release 'good' news at the same time, as they announce an M&A. It can be difficult to disentangle the abnormal returns that can be 'truly' associated with the M&A news from the positive reaction expected from the strategic release of the 'good' news (Bhagat, et al., 2002). However, as Netter et al., (2010) point out, such confounding events and strategic releases of good news are more likely to occur in the case of private targets than for public targets, since capital market regulations, in most countries, control the timing of announcements of M&As for public targets. Note that we have not reported results for private acquiring firms taking over either public or private targets.

CARs compared to 2.9% when stock is used. Shareholders of the target earn CARs of 5.2% and 2.6% in cash and stock deals respectively. Cash-financed deals generate significant economic value, on average, of US$ 14.6 million, of which US$ 5.2 million is distributed to acquirers and US$ 9.4 million to targets. The highest average economic value creation of $26.3 million is associated with equity financed deals and though insignificant, it is shared 3:1 between acquirers and targets. One possible explanation for these findings could be that the dollar value gains realised by the public acquirers, when they takeover private targets, exceed the dollar losses suffered by the acquires taking over public targets and paying with stock, in line with the arguments in Fuller et al. (2002). Overall, there is a statistically significant difference in the CARs of acquirers for different methods of payment (F-stat of 10.53). These findings are consistent with results reported by Fuller et al. (2002) and later by Faccio and Masulis (2005).

[Please Insert Table 8 About Here]

4.7 Friendly M&As.

We observe that in friendly deals, targets benefit more than in non-friendly deals while the reverse applies to acquirers. A possible reason for this finding is that, in unfriendly deals, acquirers are seeking to implement operational improvements that will not be friendly to the target management, a strategy documented as being used to realise larger gains for the acquirer (Jensen and Ruback, 1983). In Table 9 we present the results of the analysis of the relationship between the attitude of the deal and the wealth effects to the shareholders of the acquirer and target. In general, although both acquirers and targets realise positive wealth gains in all three groups, these gains are not significantly different across the groups for either acquirer or target.

[Please Insert Table 9 About Here]

Acquirers in friendly deals gain a significant 1.1% and those in the neutral group 2.1%. The targets in friendly deals earn significant abnormal returns of 3.3%, which is more than 20% higher than the 2.7% earned by targets in the neutral group. The F-tests confirm that the abnormal returns of neither the acquirers nor the targets differ significantly among the three groups. Since we do not observe negative abnormal returns to acquirers, however, we conclude that there is no evidence of overpayment by shipping acquirers in friendly deals and this contradicts the hubris notion proposed by Roll (1986). The dollar value effects are not significantly different between the three groups for either the acquirers or the targets. Small and insignificant losses are experienced by acquirers in friendly deals while dollar gains for targets are a significant $6.2 million and $ 7.6 million, on average, for the friendly and neutral groups, respectively.

4.8 Level of ownership in the target.

We denote three level of ownership: 'full ownership' when the acquirer own 100% of the target; 'control' where the acquirer owns at least 50% but less than 100%; and 'toehold' where the acquirer owns less than 50%. We find a positive relationship between the level of ownership that the acquirer achieves in the target and the wealth gains of the target shareholders, whereas for acquirers we find a non-monotonic relationship. The wealth effects of the level of ownership are reported in Table 10. The average abnormal returns of acquirers are positive and statistically significant across all three levels of ownership but differ significantly across the three groups (F-stat: 2.06). The acquirers that achieve 'control' benefit the most, realising significant CARs of 2.0% compared to the 0.7% earned by acquirers that secure 'full-ownership' while acquirers that build only a 'toehold' earn merely 0.8% CARs. A possible explanation for this finding is that where acquirers seek 'full ownership' rather than 'control', large block holder and family interests may need to be bought out at a premium.

[Please Insert Table 10 About Here]

The CARs for target shareholders are positive and significant for all three groups. Targets in the 'full ownership' group realize CARs of 4.2%, whereas targets in the 'control' and 'toehold' groups earn 3.9% and 3.3% respectively but these target gains are not significantly different across the three groups. We observe the largest economic value creation of US$ 12.1 million when acquirers obtain full ownership of the target. More than 80% of this value creation is captured by the target shareholders, who realise, on average, US$ 10.36 million compared to the US$ 1.77 million realised by acquirer shareholders. Interestingly, we see that in the 'control' group there is a transfer of wealth from acquirers to targets. In these deals the acquirers loose, on average, US$ 2.97 million while targets enjoy average significant economic value creation of US$ 8.1 million.

4.9 Bargaining power.

Our results indicate an indirect relationship between the bargaining power as measured by relative size of the target to the acquirer market value and the changes to the wealth of shareholders of the acquirer at the announcement of the takeover deal. In Table 11, we report the CARs for acquirers and targets across quartiles of the relative size ratio and market value of the acquirer in US$. We document positive and significant CARs for acquirers in the middle quartiles of relative size that diminish to insignificant levels in the highest and lowest quartiles although we note that somewhat larger gains are made in the smaller quartiles. This relationship between relative size and acquirer's CARS is dissimilar to Fuller et al. (2002). The targets, in contrast, earn positive and significant CARs in all quartiles and these target gains are significantly higher than the gains of acquirers in each quartile. A possible reason for this finding is that acquirers with higher bargaining power extract better terms and hence secure larger gains

for their shareholders. In deals where the target is very small relative to the acquirer, the effect of the deal on the acquirer might be too small to be detected. In contrast, when acquirers takeover relatively larger targets they may face integration stage problems that inhibit the realisation of potential synergistic gains and they are unable to create shareholder wealth.

[Please Insert Table 11 About Here]

In respect to the size of the acquirer, we find an inverse relationship between the market value of the acquirer and the abnormal returns at the announcement of the deal. We find positive and significant CARs for acquirers in the lowest quartiles of size in contrast to the insignificant effects in the highest two quartiles. The targets, however, realise positive and significant CARs in all quartiles which are generally significantly higher than acquirer CARs. We suggest that a possible reason for this finding is that larger acquirers may bid away to the target the potential gains from an acquisition. In the last row we report the F-value of the test that the CARs are similar across all quartiles which is significant for acquirers but not for targets.

4.10 Determinants of CARs.

In this section we employ multivariate tests on the determinants of the acquirer's cumulative abnormal returns (CARs) in the announcement period and present the results in Table 12. The coefficients of the multivariate models are estimated using an OLS approach and several hypothesised determinants of the Cumulative Abnormal Returns (CARs) of acquirers are investigated, as discussed in section 2.2. Furthermore, we report the results of estimating our models for the overall global sample, those in four different maritime sectors and finally for those in three different geographical regions.

[Please Insert Table 12 About Here]

The main patterns observed from the results reported in Table 12 are that there are four primary factors that are consistent across regions and sectors: size (-), cross-border deals (+), stock financing (+) and profitability (+). The explanatory power (R^2) of the models varies from 7% to 54%.[30] For the overall sample, we find that the CARs to shipping acquirers are higher when the acquirer nation's currency strengthens relative to the target nation's currency, the higher the price-earnings ratio of the acquirer, financed by either stock or cash and for cross-border deals. In contrast, the CARs to acquirers are lower for larger acquirers and when targeting private firms. More specifically, CARs for M&As by deep sea liner firms are higher when deals are cross-border, stock finance is used and when the acquirer's stock market is growing

[30] It is a well-known and established fact that the regressions seeking to explain the abnormal returns observed at the announcement of an event typically attain low explanatory power. For example, Fuller et al. 2002 Table VII report R^2 that ranges from 4.6% to 7.4% for OLS regressions of acquirer CARs on several explanatory variables. We further note that correlation between the explanatory variables is not likely to be a major issue as the highest correlation we found was 0.36.

faster than the target's. Nevertheless, since the explanatory power for the deep sea liner sector is low we conjecture that there are complex factors in this group that drive the returns and that deep sea liner firms may be a heterogeneous group.[31] We also find that the CARs for M&As by domestic maritime freight firms are positively associated with the acquirers' profitability and negatively with its size which indicates that the more successful M&As are implemented by the small and profitable firms in this sector.

For firms in the passenger cruisers and ferries sector, the CARs are higher in cross-border deals, for more profitable acquirers, stock financed deals and lower for larger firms with our model exhibiting high explanatory power. For M&As by port and forwarding firms, CARs are negatively associated with friendly deals and acquirer size but positively to the acquirer having a stronger currency than the target. Furthermore, there are regional variations: European acquirers realize higher CARs when they engage in cross-border deals, use stock finance, have higher earnings multiples and are smaller firms; North American shipping firms benefit the most when they are more profitable and implement deals when their macro-economic growth rate is lower and the stock market index growth is higher than the target's; Asian acquirers earn higher CARs when they are smaller, conclude cross-border deals when their macro-economic growth rate is higher than the target's and use stock finance. Overall, we note that the determinants of the abnormal returns associated with M&A in the shipping industry vary both across major regions and across sectors.

4.11 Explaining the likelihood of mergers in different regulatory periods.

To investigate the determinants of the likelihood of shipping firms engaging in M&A activities during periods of differing regulatory arrangements, we estimate a multinomial logit model. We estimate this model for the global sample and for Europe and Asia. We omit N. America as the sample size is not large enough to reliably report results for a multinomial logit model and although we can estimate the model in truncated form, we leave the study of this group for future research. Before discussing the results we underline a feature which assists in the interpretation of the results reported in Table 13. Unlike the typical reporting of coefficients of a logit model, which are not directly interpretable beyond the sign on the coefficient, we report the marginal probabilities associated with the multinomial logit model. The values reported in a given row in the table should be interpreted as the change in the probability we would observe if that variable were to increase by 1%.[32] The results confirm that the likelihood of M&As being undertaken varies across the different regulatory periods and within a given period the results also vary across regions.

[31] The deep sea liner group can be categorised into container fleets, dry-bulk and tankers. The operational characteristics of these three types of ships are very different.

[32] Technically, we are reporting the first derivative of the logistic probability distribution function. The reported values are the infinitesimal change in the probability. Since the logisitic function is nonlinear the first derivative takes different values depending on where in the domain the derivative is evaluated. We have evaluated the first derivative when each variable is set at the median value of that variable.

[Please Insert Table 13 About Here]

For the overall sample, in the deregulation period (pre-OSRA), a 1% increase in the Baltic Dry Index leads to a 0.59% lower likelihood of undertaking an M&A in that period. Similarly, a 1% increase in the bunker fuel price index leads to a 1.02% lower chance of an M&A being completed in the deregulation period. Irrespective of region, an increase in either variable leads to a lower likelihood of an M&A in the regulation period. For example, in Asia a 1% increase in the Baltic Dry Index leads to a 0.54% lower chance of an M&A in the regulation period, but to a 0.80% reduction for Europe. The likelihood of M&As occurring, since 2008, rises by 3.93% in response to a Bunker Fuel Index rise of 1%, especially in Europe but not in Asia. A rise in bunker costs leads to a quadrupling of the likelihood of an M&A occurring post-2008 in European shipping but that is not the case among Asian shipping firms, who appear insulated from M&A pressures associated with rising bunker costs. Our conclusion from these results is that, in Europe, shipping firms are facing increasing pressure to save costs or otherwise achieve economies of scale.

Similarly we find that firm size has differential marginal effects across different regulatory periods. Larger European shipping firms are 0.94% less likely to engage in M&As prior to the introduction of OSRA in 2000, while Asian firms are 0.72% more likely. Post-2008, European firms are 6.22% more likely and Asian firms 2.19% more likely to engage in M&As. This finding indicates that European shipping firms have nearly 3 times the odds of engaging in M&As compared to Asian shipping firms. Another interesting result with respect to financing is that European shipping firms are over 6% more likely to use cash financing in M&As prior to the EU repeal and are 10.98% less likely to be financed by cash after that, while Asian shipping firms are now 0.95% more likely to employ cash financing. Overall, there is a variation in the determinants of the merger propensities of shipping firms, across different regulatory periods and different regions.

5. Conclusion.

We report results from the first global and comprehensive study of the wealth effects of shipping M&As for acquirers and targets. Using the event-study methodology to measure the equity markets evaluation of these events, we find that targets realise CARs of 3.3% and acquires 1.2% at announcement. Shipping M&As create significant wealth for the companies involved which is captured mostly by the target's shareholders. Interestingly, acquirers realise positive CARs contrary to evidence reported in general M&A studies. The magnitude of the positive abnormal returns is different across sectors for acquirers and across regions for targets. The largest wealth creation for acquirers is observed in the following sectors: passengers, ferries, marinas and services.

We reach some interesting conclusions specific to the shipping industry contrary to the evidence reported for M&As in general. Shipping M&As that are diversifying lead to larger gains for shareholders of both acquirers and targets than focus-increasing transactions. The acquirers of public targets gain more

than acquirers of private targets. Our interpretation is that there are clear economies of scope in the shipping industry and that private firms wield significant bargaining power. Additionally, deals involving cash as the means of payment lead to higher gains than when stock is used, a result that holds more for targets than for acquirers. Furthermore, our results show that targets gain more in friendly deals while acquirers gain more in deals that are not friendly. Finally, since relative size is associated with acquirer wealth gains, we conclude that acquirers with higher bargaining power extract better terms and hence secure larger gains for their shareholders. Target shareholders gain, in the announcement period (irrespective of variations in relative size and acquirer size), while acquirers that gain are smaller or involved in small deals.

Overall, the study sheds light on important aspects of M&As in the shipping industry and documents factors that drive the associated wealth effects. The determinant of the acquirer's shareholder wealth gains are smaller acquirer size, higher acquirer profitability, use of stock financing and engaging in cross-border deals. We conclude that the more efficient firms in the maritime industry have a higher likelihood of embarking on consolidation via M&As within their industry. The determinants of such gains are different across regions and sectors. By investigating the different drivers of the propensity to merge in different regulatory periods, we also conclude that European shipping firms are sensitive to changes in bunker rates but interestingly that Asian firms are not, while the larger firms in Europe and Asia are both more likely to engage in M&As after the EU repeal of exemption from competition regulations than in previous periods. Furthermore, while in the pre-OSRA period European and Asian shipping firms are more likely to engage in concentration-increasing M&As, they are now less likely to do so. Finally, we conclude that while European shipping firms were 1.5 times more likely to use cash financing for M&As prior to the passage of OSRA than after the EU repeal of exemption, Asian shipping firms are three times more likely to use cash financing after the EU repeal.

The study makes five contributions to the shipping transportation literature. It reports the first globally comprehensive set of results of the wealth implications for targets and acquirers in shipping M&As. The finding that both acquirers and targets benefit in shipping M&As is different from that reported in the general M&A literature where targets gain but acquirers not. Secondly, this is the first study that examines wealth effects and the economic effects of M&As on both targets and acquirers across regions and sectors. We further investigate the differential wealth effects of the strategies pursued by shipping firms and conclude that there are clear economies of scope in the shipping industry and that private firms wield significant bargaining power. Additionally, the study avoids sample selection biases by including all shipping M&As making the findings representative and generalisable of M&As in the entire shipping industry. Furthermore, exploring the determinants of wealth effects we document variations in these determinants across maritime sectors and geographical regions. The final contribution is that regulatory interventions in the US and the EU, have had significant and important effects on the shipping industry. We report that the

determinants of the propensities to merge differ across three periods of major regulatory change in the shipping industry.

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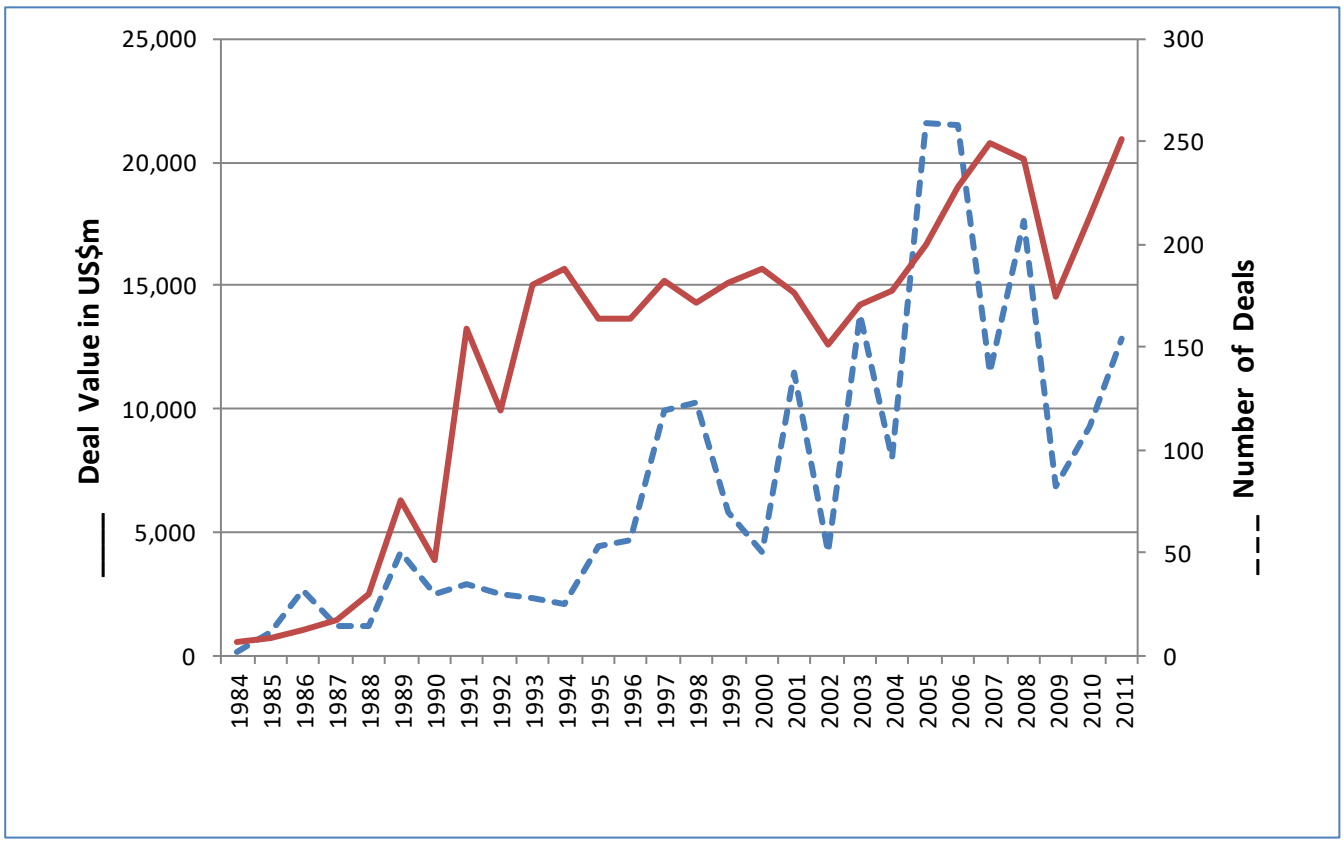
Appendix A. Variable Definitions

Variable	Definition
CAR(-3, +1)	Cumulative abnormal return of bidder's stock over the event window around the announcement day 0. Our announcement event window is (-3, +1) for bidders and (-3, +1) for targets. We calculate abnormal returns using the market model, with parameters estimated over the 120 days prior to our observation period from day -180 to day -61 before the announcement day 0. As market returns, we use the returns of the stock market index where our sample companies are listed.
Region	Four broad geographical regions of the country of acquirer or target: Europe, North America, Asia and the rest of the world.
SIC Sector	The 4-digit SIC code for acquirers and target is used to group them in three larger groups.
Cross-border	Dummy variable: one when acquirer and target are from different countries, zero otherwise (i.e. domestic).
Focus	Dummy variable: one when the acquirer and target share the same 4-digit SIC code and the deal increases acquirer focus; zero otherwise, when the deal is classified as diversifying transaction.
Private Target	Dummy variable: one when the target is privately held company, zero otherwise.
Cash finance	Method of payment: one when the payment is made with cash, two when the acquirer pays with stock and three otherwise.
Deal Attitude	Friendly if the deal is recommended by the management of the target, neutral if SDC define the deal as neutral, hostile and the rest are classified as 'others'.
Deal value	The value of the deal as reported in SDC in US$ billion.
Market-to-Book (MTB)	The market value of equity one month prior to the acquisition announcement divided by the book value of equity as reported in the financial statements at the financial year-end prior to the announcement. Both values are from Datastream (is a valuation multiple that can act as a measure of growth prospects)
Price-Earnings (PE) ratio	Share price (one month before announcement) divided by earnings-per-share (also a valuation multiple and one that acts as measure of the reciprocal of cost of equity) - from Datastream.
Return on Assets (ROA)	Profit before Interest and Tax divided by Total Assets (a measure of investment performance) - from Datastream.
Interest Cover	Profit before Interest and Tax divided by Interest Expense (measure of corporate liquidity) - from Datastream.
Operating Margin	Operating Profit divided by Sales (measure of operating profitability) - from Datastream.

Figure 1
Global shipping M&A activity [a]



[a] All shipping mergers since 1984 reported on Securities Data Corporation's merger and acquisition database. A total of 4,122 deals with a total value of US$ 200.2 billion. The left-hand side axis shows the total annual deal value in US$ millions and the right-hand side axis the number of deals per year.

Table 1

Annual distribution and average annual deal value of freight transportation mergers and acquisitions. [a]

Panel A: Annual distribution.[b]

		Acquirers Size		Deal Value		RelSize Acq/Tar	
Year	N	Mean	Median	Mean	Median	Mean	Median
1984	4	0.144	0.144	0.022	0.022	1.310	1.310
1985	2	0.497	0.497	0.272	0.272	1.030	1.030
1986	5	0.971	0.949	0.509	0.491	1.362	1.360
1987	8	0.626	0.022	0.128	0.052	1.010	1.010
1988	12	1.176	0.434	0.052	0.009	1.444	1.820
1989	19	1.550	0.434	0.136	0.016	1.819	1.650
1990	24	4.739	6.744	0.044	0.006	4.046	5.418
1991	29	0.906	0.183	0.097	0.012	2.202	1.830
1992	28	0.765	0.094	0.109	0.010	2.639	2.510
1993	39	1.046	0.259	0.010	0.010	2.393	1.890
1994	45	0.471	0.215	0.015	0.009	1.662	1.530
1995	59	0.703	0.209	0.076	0.016	1.957	1.880
1996	52	0.591	0.277	0.050	0.008	1.470	1.430
1997	66	0.385	0.117	0.088	0.022	1.485	1.315
1998	54	1.035	0.358	0.190	0.024	2.347	1.810
1999	53	0.979	0.477	0.066	0.034	1.613	1.510
2000	55	1.541	0.360	0.068	0.020	1.519	1.310
2001	45	0.867	0.282	0.172	0.013	1.522	1.125
2002	47	0.982	0.067	0.018	0.005	1.170	1.200
2003	53	0.595	0.078	0.453	0.004	0.997	0.810
2004	60	1.012	0.228	0.092	0.006	1.546	1.400
2005	71	1.544	0.285	0.174	0.016	1.794	1.690
2006	81	1.673	0.335	0.130	0.013	1.692	1.565
2007	92	1.507	0.402	0.087	0.022	1.872	1.740
2008	61	3.347	1.032	0.164	0.014	2.240	1.985
2009	63	3.450	0.334	0.043	0.006	1.650	1.630
2010	62	1.720	0.258	0.060	0.016	1.279	0.880
2011	77	2.900	0.610	0.075	0.019	1.766	1.040
Total	1266	1.590	0.295	0.105	0.014	1.755	1.430

Panel B: Regional distribution.[c]

		Acquirer Size		Deal Value		RelSize Acq/Tar	
Region	N	Mean	Median	Mean	Median	Mean	Median
Europe	550	1.510	0.301	0.138	0.019	3.950	0.790
N. America	106	0.877	0.272	0.156	0.030	0.410	0.175
Asia	524	1.835	0.299	0.068	0.008	0.646	0.300
Others	86	0.204	0.097	0.113	0.013	0.967	0.268

Panel C: Sector distribution.[d]

		Acquirer Size		Deal Value		RelSize Acq/Tar	
Sectors	N	Mean	Median	Mean	Median	Mean	Median
FRTR	918	1.803	0.304	0.655	0.151	1.702	0.536
PFMS	159	0.594	0.143	0.385	0.061	0.760	0.620
MC	189	1.175	0.300	0.683	0.238	5.651	0.242

[a] This table provides descriptive statistics for our sample of mergers and acquisitions. Summary statistics are reported for the sample, which includes all mergers and acquisitions in the shipping industry covered by the Securities Data Corporation (SDC) mergers and acquisitions database, from all countries, announced over the period from 1984 to 2011.

[b] Panel A reports the annual distribution of the number of M&A announcements, the mean and median market value of equity of acquirers and deal value in US$bn converted at the US$/local currency exchange rate prevailing at the announcement date of each deal and the ratio of equity market value of target to acquirer.

[c] Panel B reports the distribution of the sample across major regions.

[d] Panel C reports the distribution across major shipping sectors: Sector 1 is Freight Transportation (FRTR), sector 2 is Passengers, Ferries, Marinas and Services (PFMS) and sector 3 is Marine Cargo Handling (MCH).

Table 2
Acquirers and targets characteristics. [a]

Variable	Acquirers					Targets				
	N	Mean	Median	Minimum	Maximum	N	Mean	Median	Minimum	Maximum
Market Value ($bn)	856	1.590	0.295	0.000	25.112	195	0.631	0.151	0.001	18.087
Total Assets ($bn)	876	2.457	0.577	0.002	56.209	165	1.482	0.443	0.001	26.292
Net Income ($bn)	872	0.113	0.023	-0.731	3.864	168	0.014	0.009	-1.442	0.589
EBITDA ($bn)	871	0.298	0.065	-0.450	12.516	157	0.104	0.038	-1.123	1.297
Interest Expense ($bn)	860	0.043	0.009	0.000	1.063	156	0.028	0.009	0.000	0.337
Operating Income ($bn)	876	0.167	0.030	-0.554	6.606	165	0.049	0.015	-0.625	0.847
Sales ($bn)	878	2.233	0.267	0.000	48.471	165	1.203	0.246	0.002	20.373
Operating Cash ($bn)	876	0.212	0.046	-0.195	6.474	165	0.078	0.026	-0.629	1.058
Interest Cover	848	24.1	6.1	-112.4	4,550.3	148	22.3	4.9	-111.4	158.4
Operating Margin	865	-0.069	0.092	-70.143	0.767	159	0.098	0.067	-0.033	0.227
PE	858	15.651	6.115	-112.383	314.741	150	11.235	4.008	-46.382	120.340
MTB	787	1.925	1.442	-14.005	34.740	147	2.148	1.202	-5.637	9.994
Return on Assets	860	0.041	0.047	-0.816	0.311	162	0.011	0.028	-0.072	0.096

[a] The table reports the number, mean, median, minimum and maximum for a number of key accounting and market characteristics of acquirers and targets. Accounting data and equity market valuation ratios for the companies in our sample are collected from Datastream. All data relating to monetary values are converted to US$m at the US$/local currency exchange rates prevailing at the announcement date of each merger. We report summary statistics for market value of equity, total assets, net income, earnings before interest, tax, depreciation and amortization (EBITDA), interest expense, operating income, sales and operating cash, all in (US$bn) and the following ratios: interest cover as a measure of firm-liquidity, operating margin as a measure of operating efficiency, price-earning (PE) and market-to-book (MTB) as measures of equity market valuation multiples and finally return on assets as a measure of investment performance.

Table 3
Average abnormal returns for acquirers and targets.

Panel A: Daily Abnormal Returns (AR) around Day 0. [a]				
	Acquirers		Targets	
Day	AR	% positive	AR	% positive
-5	0.001	47.640	0.003*	45.950
	(0.028)	(34.214)	(0.001)	(41.667)
-4	0.001	47.400	0.001	47.030
	(0.001)	(31.015)	(0.001)	(58.155)
-3	0.002*	51.210	0.004***	57.840**
	(0.001)	(71.803)	(0.001)	(27.128)
-2	0.003**	49.370	0.006***	56.220*
	(0.001)	(132.147)	(0.001)	(33.247)
-1	0.002***	48.900	0.004***	55.140
	(0.001)	(75.779)	(0.001)	(39.473)
0	0.004***	49.710	0.017***	55.140
	(0.001)	(292.756)	(0.001)	(39.473)
1	0.001***	48.900	0.001	45.950
	(0.001)	(75.779)	(0.005)	(41.667)
2	0.001	47.980	0.001	47.570
	(0.001)	(40.363)	(0.003)	(71.891)
3	-0.003**	45.670**	-0.005***	43.240*
	(0.001)	(17.930)	(0.001)	(23.526)
4	-0.002***	44.410***	0.000**	50.270
	(0.001)	(13.481)	(0.000)	(683.946)
5	0.001	47.520	0.001	47.570
	(0.001)	(32.539)	(0.003)	(71.891)

Panel B: Cumulative Abnormal Returns (CAR) in various windows. [b]					
	Acquirers			Targets	
	CAR	% positive		CAR	% positive
-3, +1	0.012***	52.480	- 3,+1	0.033***	65.410***
	(0.002)	(35.935)		(0.003)	(15.608)

Panel C: Economic $ Value. [c]		
Acquirer $ Value	Target $ Value	Total $ Value
7.752	6.792**	14.54
(9.014)	(2.602)	(7.239)

[a] Panel A reports in columns two and four, daily average abnormal returns for the full sample of acquirers and targets respectively. Columns three and five report the percentage of acquirers and targets with positive abnormal returns respectively on each day.
[b] Panel B reports Cumulative Abnormal Returns (CARs) for various windows.
[c] Panel C reports economic value changes. The standard errors are reported in brackets () and in those cases where the Levene test of difference in variances is rejected, the Satterthwaite t-test for difference in means is used while the normal t-test of difference in means is used otherwise The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 4

Regions and sectors: Cumulative Abnormal Returns (CARs).

Panel A: CARs (-3+1)for acquirers and targets across sectors. [a]			
	Acquirer	Target	t-diff
FRTR	0.009***	0.034***	44.79***
	(0.00)	(0.01)	
PFMS	0.029***	0.027***	17.31***
	(0.01)	(0.00)	
CM	0.013***	0.021***	13.43***
	(0.00)	(0.00)	
F Value	2.80**	0.44	

Panel B: CARs (-3+1)for acquirers and targets across regions. [b]			
	Acquirer	Target	t-diff
Europe	0.009***	0.033***	57.59***
	(0.00)	(0.00)	
N. America	0.013**	0.045***	24.49***
	(0.01)	(0.01)	
Asia	0.017***	0.023***	25.93***
	(0.00)	(0.00)	
Rest	-0.006	0.077***	19.62***
	(0.01)	(0.01)	
F Value	0.95	1.97*	

[a, b] The table report CARs for acquirers and targets, in Panel A, split by maritime sectors and in Panel B split by major geographic regions. In column four we report the t-test of difference in means between the CARs of acquirers and targets in a given region or sector for the announcement window, which for acquirers is from day -3 to day +1 and for targets is from day -3 to day +1. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 5

Cumulative abnormal returns and economic value effects in cross-border and domestic shipping merger deals.

Panel A: CARs. [a]				
	Acquirer		Target	
	(-3, +1)	% Positive	(-3, +1)	% Positive
Domestic	0.01***	51.41	0.02***	60.71**
	(0.00)	(79.13)	(0.00)	(23.94)
Cross-Border	0.01***	54.19	0.06***	80.00***
	(0.00)	(35.37)	(0.01)	(19.88)
T-diff	4.84***		31.42***	

Panel B: Economic $ Value. [b]			
	Acquirer	Target	Total
Domestic	-2.62	3.19	0.57*
	(3.01)	(2.04)	(1.79)
Cross-Border	3.39	16.01***	19.40***
	(5.78)	(5.09)	(3.20)
T-diff	0.92	2.34**	3.66***

[a,b] Panel A reports the CARs for acquirers and targets respectively, in columns two and four and the percentage of positive CARs in columns three and five, for domestic and cross-border deals. Panel B report the dollar value effects. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 6

Cumulative abnormal returns and economic value effects in focus and diversifying shipping deals.

Panel A: CARs. [a]				
	Acquirer		Target	
	(-3,+1)	% Positive	(-3,+1)	% Positive
Diversification	0.012***	52.750	0.031***	67.530***
	(0.00)	(45.01)	(0.00)	(21.95)
Focus	0.012***	52.180	0.034***	63.890***
	(0.00)	(58.84)	(0.00)	(22.13)
T-diff	13.926***		2.558**	

Panel B: Economic $ Value. [b]			
	Acquirer	Target	Total
Diversification	-3.171	5.898*	2.727*
	(3.88)	(3.53)	(1.86)
Focus	2.828	6.439***	9.266***
	(4.32)	(2.36)	(2.80)
T-diff	1.040	0.130	3.362***

[a, b] Panel A reports for focus increasing and diversifying deals the CARs for acquirers and targets, in columns two and four respectively and the percentage of positive CARs in columns three and five while the dollar value effects are in Panel B. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 7
Cumulative abnormal returns (CARs) and economic value effects that involve either private or public targets. [a]

	(-3,+1)	% Positive	Economic $ Value
Public	0.021***	56.110*	0.039***
	(0.01)	(30.89)	(0.01)
Private	0.009***	51.240	0.031***
	(0.00)	(81.40)	(0.00)
T-diff	12.567***		3.500***

[a] This table reports CARs for acquirers of public and of private targets. in columns two and four and the percentage of positive CARs in columns three. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 8
This table reports CARs and economic value effects in shipping mergers by method of payment.

Panel A: CARs. [a]				
	Acquirer		Target	
	(-3, +1)	% Positive	(-3, +1)	% Positive
Cash	0.038***	67.710***	0.052***	77.780**
	(0.01)	(19.51)	(0.01)	(33.00)
Equity	0.029***	64.440*	0.026*	58.330
	(0.01)	(33.25)	(0.01)	(71.44)
Other	0.008***	49.720	0.031***	65.030***
	(0.00)	(334.81)	(0.00)	(18.08)
F-Value	10.53***		0.58	

Panel B: Economic $ Value. [b]			
	Acquirer	Target	Total
Cash	5.226*	9.385	14.611*
	(3.05)	(7.89)	(8.46)
Equity	19.398	6.947*	26.345**
	(11.77)	(4.02)	(12.44)
Other	-2.251	5.705**	3.454
	(3.34)	(2.31)	(4.06)
F-Value	1.62	0.15	1.62

[a,b] Panel A reports CARs for acquirers and targets in columns two and four respectively and the percentage of positive CARs in columns three and five. Panel B report the dollar value effects. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 9
Cumulative Abnormal Returns (CARs) and economic value effects by deal attitude.

Panel A: CARs. [a]				
	Acquirer		Target	
	(-3, +1)	% Positive	(-3, +1)	% Positive
Friendly	0.011***	52.170	0.033***	65.150***
	(0.00)	(45.00)	(0.00)	(18.71)
Neutral	0.021***	52.990	0.027***	68.290**
	(0.00)	(76.67)	(0.00)	(29.15)
Other	0.003	61.110	0.042***	58.330
	(0.00)	(64.82)	(0.01)	(101.02)
F-Value	1.40		0.17	

Panel B: Economic $ Value. [b]			
	Acquirer	Target	Total
Friendly	-0.329	6.184***	5.86
	(3.24)	(2.26)	(3.95)
Neutral	1.751	7.637*	9.39
	(6.21)	(4.37)	(7.59)
Other	-14.109	1.952	-12.16
	(27.84)	(11.07)	(29.96)
F-Value	0.29	0.21	0.41

[a] Cumulative Abnormal Returns by deal attitude are reported in Panel A. Results are reported in columns two and four for acquirers and targets respectively. The percentage of positive CARs are in columns three and five.
[b] The dollar value effects for acquirers and targets are in Panel B. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 10

Cumulative Abnormal Returns (CARs) and economic value effects by ownership levels in the target firm.

Panel A: CARs. [a]				
	Acquirer		Target	
	(-3, +1)	% Positive	(-3, +1)	% Positive
Full Ownership	0.007***	52.780	0.042***	70.210***
	(0.003)	(55.982)	(0.005)	(25.334)
Control	0.020***	56.030	0.039***	75.860***
	(0.007)	(43.103)	(0.007)	(27.235)
Toe Hold	0.008**	49.090	0.033***	60.340
	(0.003)	(210.236)	(0.004)	(38.294)
F-Value	2.06		0.15	

Panel B: Economic $ Value. [b]			
	Acquirer	Target	Total
Full Ownership	1.771	10.362***	12.134**
	(4.123)	(3.243)	(5.25)
Control	-2.977	8.080*	5.103
	(8.577)	(4.490)	(9.68)
Toe Hold	4.027	3.830	7.857
	(6.061)	(3.717)	(7.11)
F-Value	0.28	0.88	2.74**

[a] In Panel A, CARs for acquirers and targets are reported in columns 2 and 4 respectively and the percentage of positive CARs in columns 3 and 5.

[b] Panel B reports the dollar value effects for acquirers and targets. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 11

Cumulative Abnormal Returns (CARs) of acquirer and target by quartiles of relative firm size and market value of acquirer. [a]

	Quartiles of Relative Size.			Quartiles of Acquirer Market Value in US$.		
	Acquirer	Target	T-diff	Acquirer	Target	T-diff
Q1	0.005	0.064***	66.166***	0.027***	0.071***	38.368***
	(0.003)	(0.007)		(0.006)	(0.009)	
Q2	0.032***	0.097***	29.975***	0.013***	0.052***	19.924***
	(0.008)	(0.013)		(0.005)	(0.009)	
Q3	0.003**	0.073***	29.881***	0.006	0.067***	28.523***
	(0.001)	(0.009)		(0.004)	(0.011)	
Q4	0.010	0.020**	6.842***	0.000	0.057***	44.462***
	(0.007)	(0.010)		(0.002)	(0.008)	
F Value	4.24***	1.67		3.47**	0.14	

[a] Relative size is defined as the ratio of the market value of the target to the acquirer. Size of the acquirer is defined as its equity market value in US$ one month before the announcement of the deal. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 12

Determinants of the Cumulative Abnormal Returns (CARs). [a]

	Overall	Deep Sea	Domestic Freight	Passenger Cruisers	Ports & Forwarders	Europe	N. America	Asia
Friendly	-0.017	-0.001	-0.025	0.006	-0.087*	-0.046*	-0.015	0.006
	(0.85)	(0.11)	(1.32)	(0.23)	(1.90)	(1.75)	(0.78)	(0.52)
Control of Target	0.007	0.013	-0.030	0.018	-0.037	-0.012	-0.015	0.024*
	(0.55)	(1.40)	(1.33)	(0.71)	(0.90)	(0.91)	(0.99)	(1.93)
Cross-Border	0.026***	0.010*	-0.033	0.066**	0.048	0.026**	-0.005	0.023*
	(7.08)	(1.68)	(0.81)	(2.03)	(1.20)	(1.99)	(0.43)	(1.82)
Focus-Increasing	0.006	0.004	0.010	0.019	-0.004	-0.010	-0.010	0.019
	(0.64)	(0.45)	(0.47)	(0.41)	(0.12)	(0.80)	(0.64)	(1.26)
Target is Private	-0.013***	-0.014	0.003	-0.053	-0.002	-0.024	-0.033*	-0.014
	(3.66)	(1.54)	(0.13)	(0.79)	(0.06)	(1.64)	(1.84)	(1.20)
Cash Finance	0.021*	0.018	0.029	-0.024	0.082	-0.003	0.030	0.022
	(1.71)	(0.89)	(1.06)	(0.79)	(1.21)	(0.22)	(1.50)	(0.93)
Stock Finance	0.039**	0.023**	-0.014	0.115**	0.024	0.049**	-0.002	0.058**
	(2.52)	(1.96)	(0.59)	(2.33)	(1.49)	(1.97)	(0.11)	(2.61)
Ln(Size)	-0.008***	-0.002	-0.020**	-0.025***	-0.020*	-0.011*	-0.004	-0.010***
	(6.86)	(0.83)	(2.58)	(2.87)	(1.71)	(1.88)	(0.69)	(3.83)
FX Relative	0.195***	-0.062	-0.050	0.210	0.932***	0.165	-0.097	0.168
	(4.86)	(1.30)	(0.08)	(1.43)	(3.02)	(1.25)	(1.17)	(1.04)
GDP_PPP Relative	-0.083	0.149	0.777	0.836	-0.708	-1.845	-0.693*	0.418**
	(0.13)	(0.89)	(0.78)	(0.73)	(0.83)	(1.62)	(1.67)	(2.03)
Mkt Relative	-0.018	0.074**	-0.025	-0.180	-0.278	0.045	0.137***	-0.004
	(1.35)	(2.54)	(0.16)	(1.16)	(1.63)	(0.86)	(3.52)	(0.08)
Acquirer PE	0.000***	0.000	0.000	0.000	-0.001	0.000**	0.000	0.000
	(3.57)	(1.58)	(0.97)	(0.21)	(1.43)	(2.36)	(0.17)	(1.56)
Acquirer ROA	0.000	0.000	0.001***	0.000*	0.000	0.000	0.001***	0.000*
	(0.64)	(0.62)	(3.14)	(1.87)	(0.74)	(0.30)	(2.67)	(1.66)
Intercept	0.029	-0.132	-0.455	-0.543	0.398	1.849	0.733*	-0.465**
	(0.04)	(0.81)	(0.78)	(0.45)	(0.40)	(1.61)	(1.66)	(2.30)
N	476	317	38	52	69	194	40	225
R2	0.10	0.07	0.47	0.54	0.48	0.23	0.37	0.19

[a] Ordinary Least Square (OLS) regressions of CARs for acquirers in shipping M&As. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.

Table 13

Multinomial Logit Models: Marginal Probabilities. [a]

	Overall			Europe			Asia		
	Deregulated	Post-OSRA	Post-EU	Deregulated	Post-OSRA	Post-EU	Deregulated	Post-OSRA	Post-EU
Friendly	0.12	0.02	-0.11	-0.22	-0.44	0.57	0.35	0.04	-0.15
	(0.28)	(0.13)	(0.28)	(0.61)	(0.48)	(0.72)	(0.58)	(0.15)	(0.31)
Target Control	0.71***	-0.23**	0.08	1.21***	-0.46	-0.47	1.43***	-0.11	-0.06
	(0.24)	(0.10)	(0.23)	(0.47)	(0.42)	(0.57)	(0.50)	(0.13)	(0.26)
Cross-Border	0.00	0.22*	-0.49**	0.35	1.14**	-1.33**	-0.07	0.18	-0.37
	(0.24)	(0.11)	(0.21)	(0.53)	(0.49)	(0.60)	(0.57)	(0.16)	(0.29)
Focus	0.55***	-0.12	-0.09	0.73*	0.70*	-1.20***	1.01**	-0.15	0.11
	(0.21)	(0.08)	(0.19)	(0.44)	(0.37)	(0.44)	(0.43)	(0.11)	(0.24)
Cash	0.19	-0.18	0.28	6.81***	6.37***	-10.98***	-0.36	-0.42**	0.95**
	(0.35)	(0.13)	(0.30)	(1.33)	(1.38)	(0.99)	(0.90)	(0.18)	(0.37)
Ln(Size)	-0.78	-0.56*	2.44***	-0.94	-0.16	6.22***	0.72	-1.23***	2.19***
	(0.58)	(0.34)	(0.75)	(0.91)	(0.77)	(2.42)	(1.10)	(0.41)	(0.83)
FX	-2.50	-0.26	3.92**	-4.68	1.43	17.54	-5.93	0.32	1.75
	(1.89)	(0.96)	(1.90)	(2.88)	(2.26)	(12.66)	(3.94)	(1.05)	(2.22)
GDP	2.34	-4.27	7.68	10.16	-13.52*	25.12	-3.16	-2.91	7.15
	(5.42)	(3.78)	(11.44)	(7.51)	(7.18)	(19.13)	(10.79)	(3.05)	(6.52)
Market	-1.29	0.45	0.55	-1.26	2.50*	-8.11*	-2.43	-0.56	2.11
	(1.19)	(0.65)	(1.58)	(1.74)	(1.45)	(4.36)	(2.11)	(0.60)	(1.33)
PE	-0.01	0.00	0.02	-0.05**	0.05**	-0.03	0.15**	-0.09**	0.11**
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.04)	(0.06)	(0.03)	(0.06)
ROA	0.00	0.02*	-0.04**	0.01	0.01	-0.12***	0.15**	0.02	-0.10
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.04)	(0.06)	(0.03)	(0.07)
Bunkers	-1.02***	0.21	0.80**	-1.44***	0.68*	3.93***	-0.45	-0.02	0.23
	(0.34)	(0.16)	(0.32)	(0.44)	(0.37)	(1.27)	(0.70)	(0.20)	(0.36)
Baltic Dry	-0.59***	0.34***	-0.09	-0.80***	0.94***	-1.24	-0.54**	0.11	0.01
	(0.13)	(0.10)	(0.25)	(0.26)	(0.25)	(0.96)	(0.23)	(0.10)	(0.19)
R^2		0.11			0.33			0.16	
N		437			169			218	

[a] Marginal propensities to merge were evaluated with the independent variables each set at their median. Standard errors are reported in parentheses. The significance levels at 10%, 5% and 1% are denoted as *,**,*** respectively.